

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

October 12, 2010

Precipitation and Snowpack

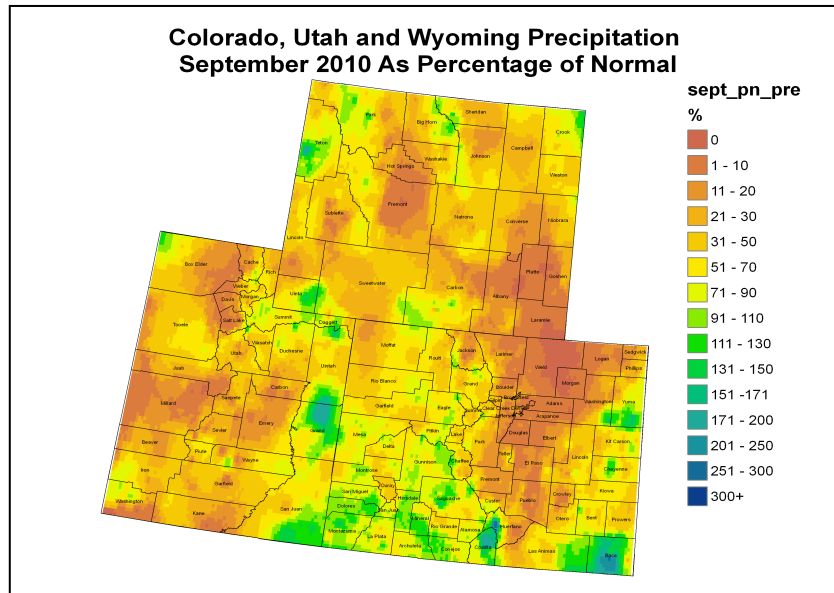


Fig. 1: September precipitation as percent of average

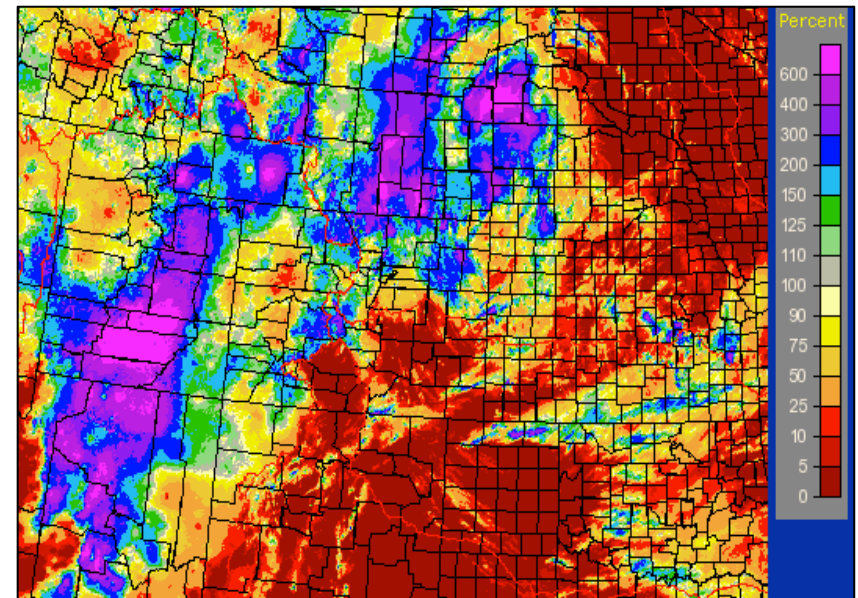


Fig. 2: October 6 – 12 precipitation in inches

Dry conditions prevailed over much of the Upper Colorado River Basin (UCRB) and surrounding areas for the month of September (Fig. 1). The Upper Green was the driest region of the UCRB with less than 50% of its average September precipitation. The eastern plains of Colorado, SE Wyoming, and western Utah were also very dry, with little or no precipitation during the period. A handful of storms did provide beneficial moisture in some areas, however. Small areas of eastern Utah and the San Juan basin received near or above average amounts of precipitation

Dry conditions have continued into the beginning of October, though the UCRB did receive some relief in the past week (Fig. 2). Eastern Utah and the Upper Green River basin in Wyoming saw good amounts of precipitation. Parts of western Colorado remained dry for the week, though northern Colorado, and some areas of eastern WY and northeastern CO, received beneficial moisture.

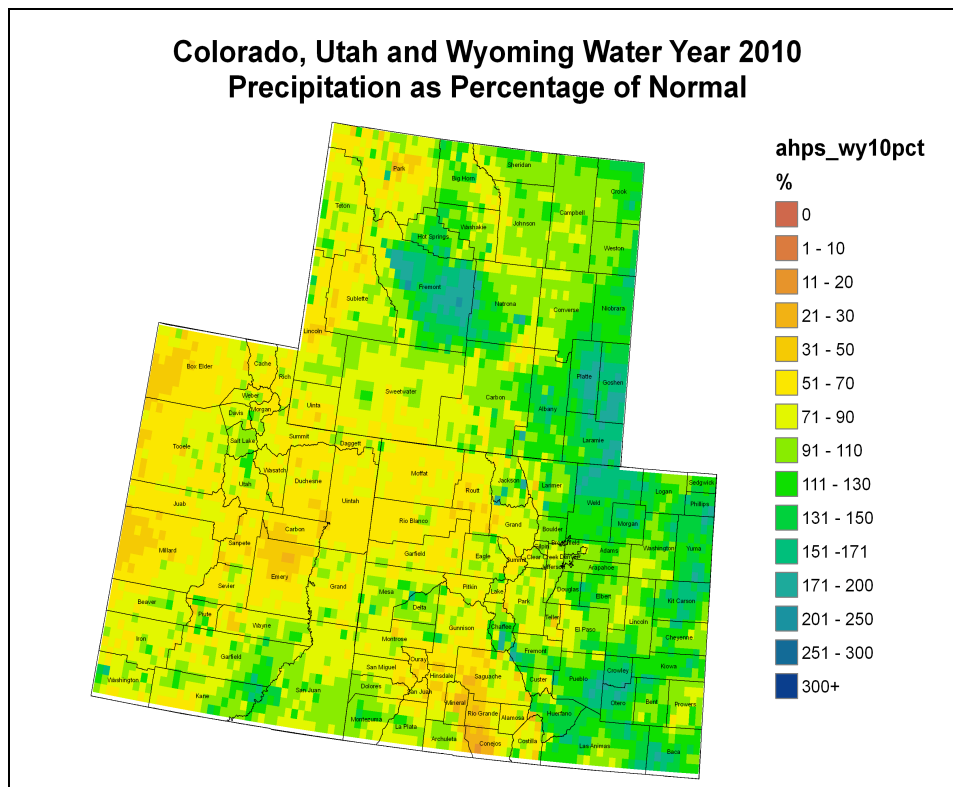


Fig. 3: Advanced Hydrologic Prediction Service WY2010 precipitation as percent of normal for CO, WY, and UT.

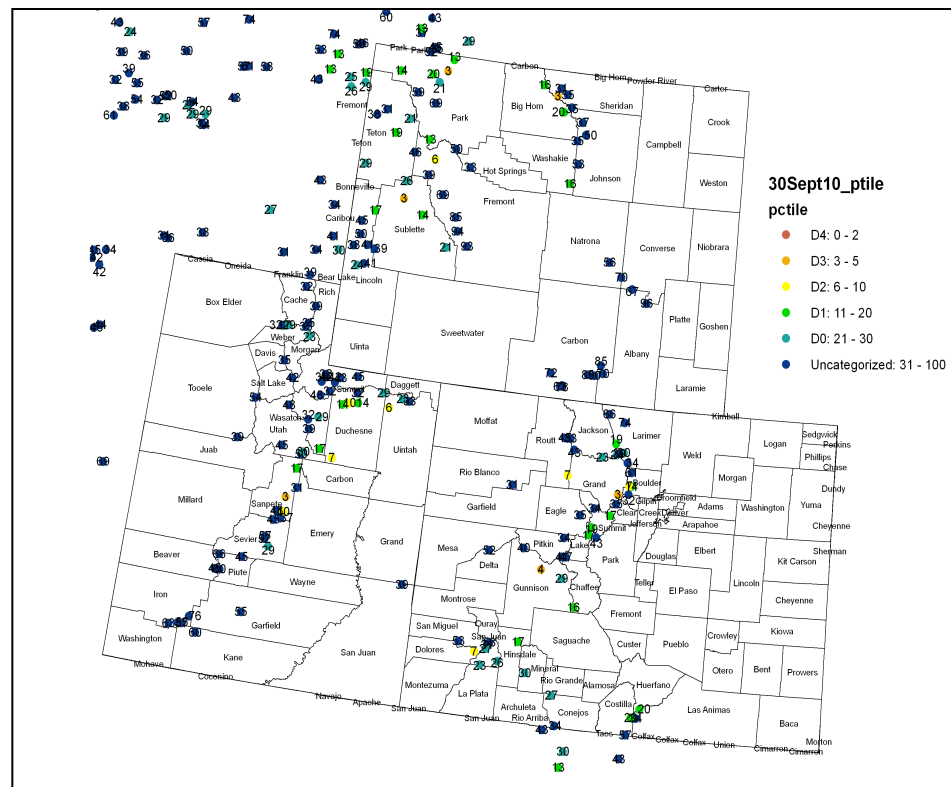


Fig. 4: SNOTEL WY2010 precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

For the water year as a whole (WY2010, Oct. 2009 – Sept. 2010) most of the UCRB saw near average precipitation (Fig. 3). Emery County, UT in the Dolores basin was driest, only receiving around 50% of its annual precipitation. The Rio Grande basin in southern CO was also very dry, due to lack of moisture at the beginning of WY2010, and again in the late spring and summer. Though eastern portions of CO and WY have recently been dry, WY2010 precipitation amounts were mostly above average.

WY2010 percentiles for the SNOTEL sites in the UCRB show the lowest values corresponding with locations of current abnormal dryness (D0 category, lower than the 30th percentile) on the U.S. Drought Monitor map—in the Rio Grande basin, the Upper and Lower Green River basins and near the Colorado headwaters region (Fig. 4).

Streamflow

Some improvement as of October 12th as less than 30% of the USGS streamgages reported below normal (24th percentile or less) 7-day average streamflows (Fig. 5). This is not quite as good as the end of August, when only 10% reported below normal flows, but a decrease from last week when 40% reported below normal flows. Below normal flows are mainly concentrated around the Colorado Headwaters region and along the White River, with largest improvements in the Lower Green River basin.

Despite below normal flows, conditions along the White River have improved over the past week. A closer look at a hydrograph along the White River shows a general increase around this time of year that is likely due to regulated flows and not natural runoff from precipitation events (Fig. 6). This is the case for several gages on the White River and also explains much of the improvement seen in the Lower Green River basin as well.

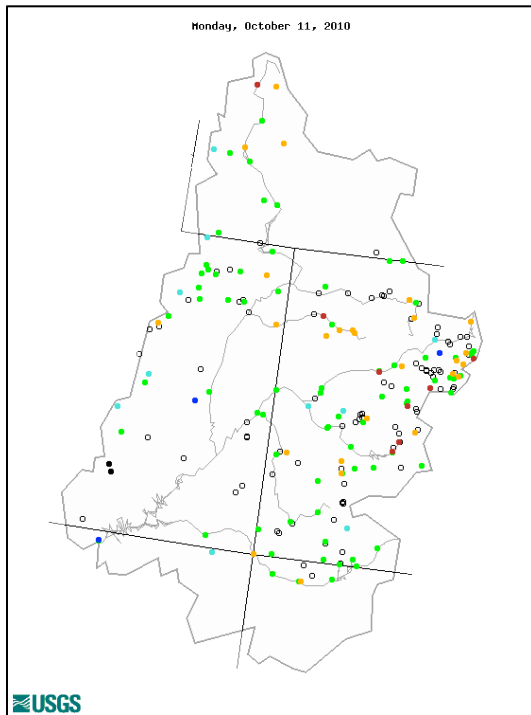
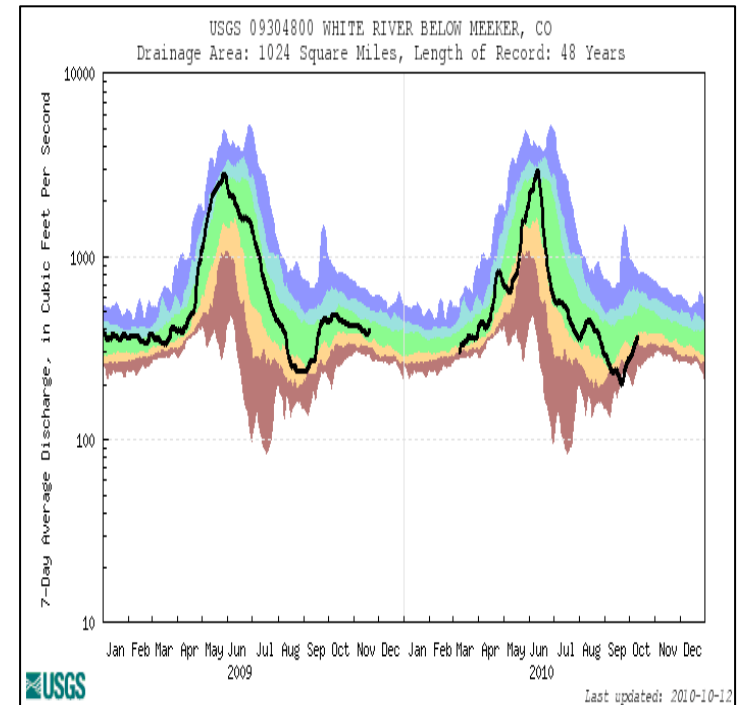


Fig. 5: USGS 7-day average streamflow compared to historical streamflow for October 12th in the UCRB.

Fig. 6: USGS 7-day average discharge over time on the White River below Meeker, CO.



Water Supply and Demand

Temperatures remained above average for the UCRB and the eastern plains over the past week—a pattern that has continued since the beginning of September. These hot conditions, combined with above normal evaporation during late summer, has meant high demand for water during the past few months. Soil moisture conditions have stayed consistently short over northern Colorado, and this deterioration has spread to the plains.

On the tail end of a particularly high demand period, lake levels at most of the major reservoirs in the UCRB have continued to decline. Flaming Gorge and Lake Granby both remain above average for this time of year. But Lake Dillon, Green Mountain and Blue Mesa Reservoirs are now all below average. Green Mountain's levels dropped over 6,000 acre feet and Blue Mesa's levels dropped over 13,000 acre feet over the past week. Lake Powell's levels actually rose this week by over 90,000 acre feet, bringing it to 79% of average and 63% of capacity.

Precipitation Forecast

The system that brought showers to the central mountains of Colorado will quickly exit the region by Wednesday allowing for a much drier airmass to take hold. This ridge of high pressure will dominate the weather for the UCRB through the end of the week and allow temperatures to again reach above average readings. The next weather maker to affect the area begins to take shape on Saturday as a trough is forecast to form over the west coast. Expect to see some shower activity appearing over portions of eastern Utah and southern Colorado by late Sunday into Monday immediately ahead of the trough. Models have still not come into good agreement on the details of this system beyond the weekend, but current trends indicate this feature will move over the UCRB sometime around the middle of next week. It is worth noting that this system will also have a decent amount of cold air associated with it, so snow will likely be at the lowest elevations we have seen yet this season.

Drought and Water Discussion

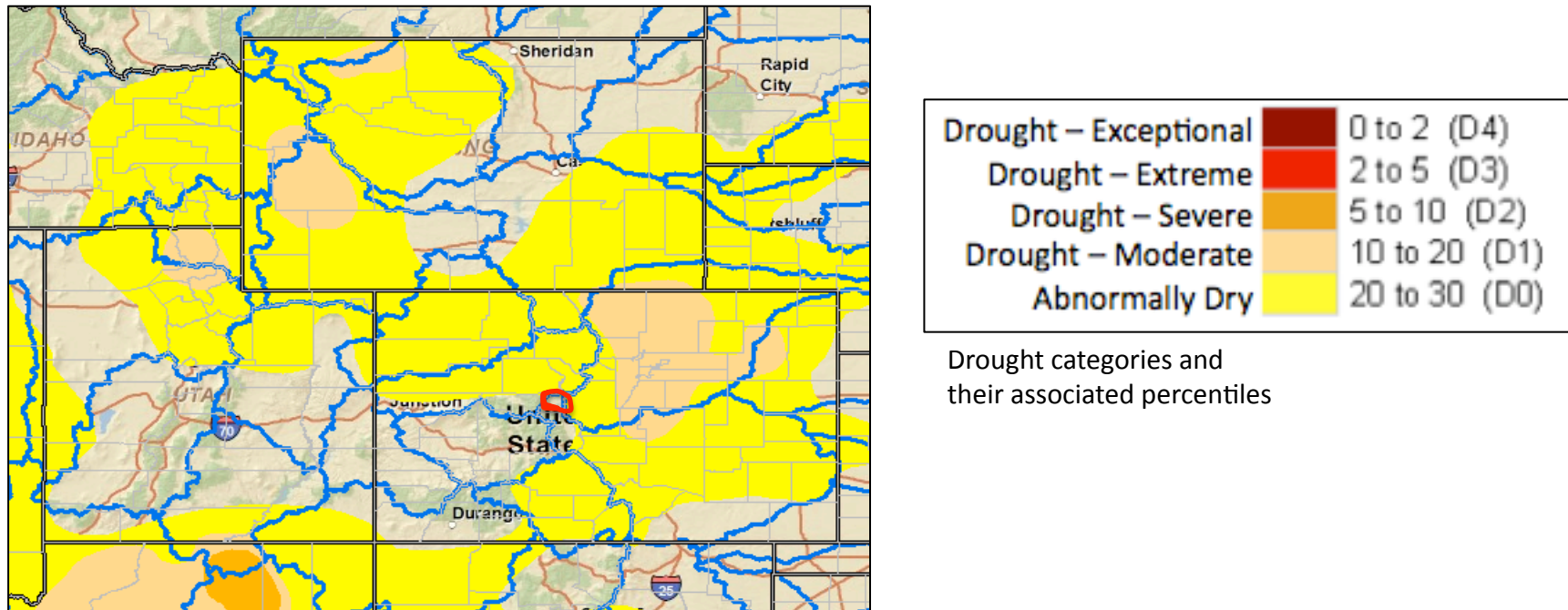


Fig. 10: October 5 release of U.S. Drought Monitor for the UCRB

No changes have been suggested for the current U.S. Drought Monitor map (Fig. 7). A couple of recent rain events have negated the need to expand D0 or D1 any further, but were not quite significant enough to warrant any category improvements.

After some review, it appears that Lake County, Colorado should be in the D0 category (Fig. 7, red line). Though no recent activities (or lack thereof) have warranted this decision for this specific week, conditions there (precipitation deficits and 30 & 60 day SPIs) are very similar to its neighbors, Park and Summit counties, which are currently in D0.